



# Rethinking the Classroom

## SPACES DESIGNED FOR ACTIVE AND ENGAGED LEARNING AND TEACHING



*Educators, researchers, and students are discovering the benefits and advantages of cooperative, active, and engaged learning. Classroom spaces that support such a shift in teaching and learning have lagged behind. A significant opportunity exists for maximizing learning opportunities and creating meaningful experiences by rethinking the classroom experience.*

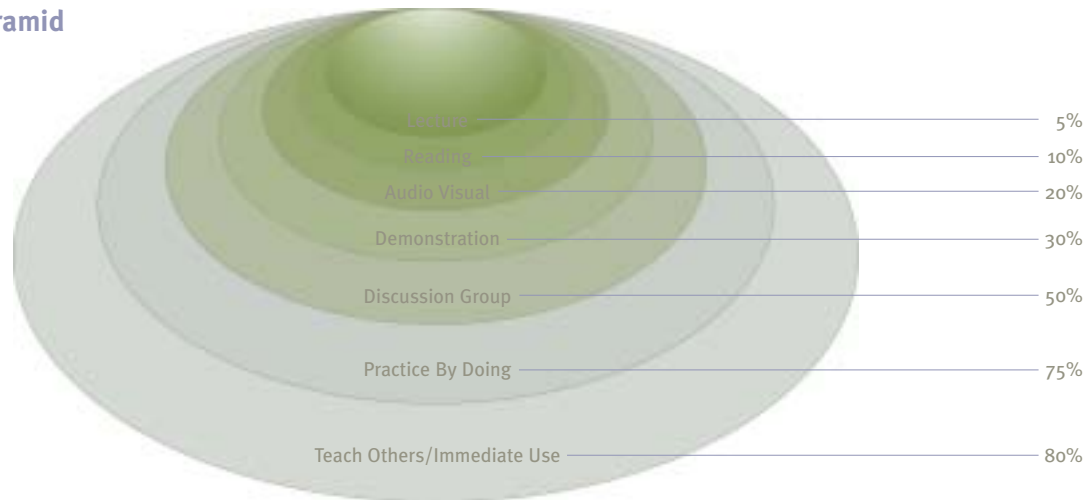
“Learning is not a spectator sport...[Students] must talk about what they are learning, write about it, relate it to past experiences, apply it to their daily lives. They must make what they learn part of themselves.” —Chickering and Gamson

Getting and keeping students engaged is perhaps the most important step in creating a successful learning outcome. The Community College Survey of Student Engagement (CCSSE) at The University of Texas at Austin estimates that only one-half of community college students return for their second

year; many leave before completing the first semester. Each year, CCSSE surveys students to identify the causes of attrition and find solutions to meeting high-risk students' needs. Among the benchmarks CCSSE measures are the level of active and collaborative learning that occurs.

An article on cooperative learning in higher education in *Change* magazine offers compelling evidence on the benefits of collaborative learning and teaching methods. “College students who would score at the fiftieth percentile when learning competitively will score in the sixty-ninth percentile when learning cooperatively; students who would score at the fifty-third percentile when learning individualistically will score at the seventieth percentile when learning cooperatively.” Measures used in the research included knowledge acquisition, retention, accuracy, creativity in problem solving, and higher-level reasoning. These are outcomes that signal successful learning and a high-quality college experience.

## The Learning Pyramid



A study by the National Training Laboratories found that the more active the teaching and learning methods, the higher the retention rates.

— Adapted from The Learning Triangle: National Training Laboratories © mindServegroup 2005

### What We Know

Classroom design influences levels of interaction and engagement. Engagement and active learning improve retention.

A study from the National Training Laboratories in 2000 found that only about 5 percent of the information delivered through lecture was retained. Compare that with retention rates at 50 percent for discussion group and 70 percent for practice by doing. Even higher, at 80 percent, was retention by students teaching others.

Greek philosopher Sophocles already knew this in the fifth century B.C. when he wrote, “One must learn by doing the thing, for though you think you know it, you have no certainty until you try.” The wisdom of that ancient perspective was reflected in research Herman Miller recently conducted at Estrella Mountain Community College (EMCC). Sixty-four percent of students surveyed said that “learning by doing” was their preferred learning style.

Alexander Astin, professor emeritus at University of California, Los Angeles, notes the shift in teaching that an active learning classroom requires. Teachers focus less on what they do and more on what the student does. Teachers are aware of how motivated the student is and how much time and energy the student devotes to the learning process. “Student involvement,” says Astin, “not teaching resources or techniques, becomes the concern of the instructor.”

Astin goes on to note that motivation then comes into play. Motivating and involving students becomes the concern of the teacher. This suggests a significant shift from traditional pedagogical outcomes.

Classroom design can help to develop skills for life and work beyond the classroom. Self-directed learning and collaborative problem solving are essential skills for success.

How students learn to learn builds essential skills for life beyond the classroom. The League for Innovation in the Community College identified outcomes for twenty-first century learners. These outcomes included communication skills, diversity and pluralism, critical thinking and problem solving, interpersonal skills including teamwork, relationship management, conflict

resolutions, workplace skills, and personal skills for management of change, learning to learn, and personal responsibility.

According to Roger Yohe, director of the Center for Teaching and Learning at EMCC, “It isn’t what the student knows; it’s what they can do with what they know. With group work, you have a lot of social norming going on. You don’t have the misbehaviors or distractions you might have with instructional teaching. Small groups keep their members in check. It is community learning. Students consult with their peer group first and go to the teacher second.”

Classroom design can increase levels of student and faculty interaction through formal and informal means.

When teachers can move around the room freely and easily connect with the student who is struggling or questioning something, then the level of interaction improves significantly. Astin states that regular interaction with faculty is more strongly related to “satisfaction with college than any other type of involvement.” Students who have interaction with their teachers are more likely to express satisfaction overall with their college experiences. The more student-faculty interaction occurs, the better the outcomes.

Comfortable classrooms—physically and psychologically—promote a sense of well-being, keep minds focused, and limit distractions.

Comfort is not always a quantifiable phenomenon. But we know that when people are uncomfortable, they are distracted. Temperature, lighting, and furnishings all play a role in a person being comfortable. Psychological comfort is also important. Environments that are intimidating or uninviting will influence the depth of learning that can take place.

Herman Miller has researched the effects of comfort in the workplace. Those findings indicate that giving people some control over their surroundings adds to their sense of well-being. When given ergonomically designed furniture and work areas,

	Traditional Classroom	Learning Studio
Students	Boring Dry Dour Oppressive Restrictive Intimidating	Inviting Welcoming Comfortable Open Clean Fresh Relaxing
Faculty	Bulky Furniture Long Tables Bolted to the Floor Institutional “Soldiers in a Row” Inefficient	Interactive Modern Flexible More Aesthetic Easy to Move Around Better for Group Work Conducive to Learning

Responses from Estrella Mountain Community College faculty and staff leave little doubt that learning studios offer more positive environments for learning and teaching than traditional classrooms do.

their ability to stay focused and on task is improved. In a sense, a comfortable environment clears the mind of the distractions that impede the work or learning that needs to be done.

Diversity among the student population is increasing. The challenge for colleges, then, is to create classroom spaces that can be flexible enough to adapt to this diversity and enhance the learning experience for all students, regardless of their backgrounds and educational objectives.

### Therefore

The goal of classroom design is to enrich academic, psychological, and sociological growth. The design of such spaces should be intentionally serendipitous and avoid prescriptive and restrictive behaviors, for both teachers and students. The design of learning spaces should increase levels of engagement, foster active learning and teaching, and support the learning goals of higher education institutions.

### Challenge

If active and collaborative learning and teaching is more effective than lecture methods and individually based learning, why haven't classroom environments changed to support them? If instructor-directed, competitive environments result in lower retention scores and higher attrition, why do students continue to sit in immovable desks—“soldiers in a row”; as one community college professor observed—rather than organized in groups at tables or sitting in a circular arrangement? Why haven't classroom spaces evolved to support kinetic teaching and dynamic learning?

The difficulty in answering these questions lies in the fact that institutions must align many different elements. They encompass researching learning and teaching methods and cultural and sociological trends, understanding the needs of teachers, students, and administrators, and determining how the shared goals of these constituencies can best be realized in the learning spaces throughout a campus.

Successfully meeting the challenge of creating engaging and active learning environments requires collaborative vision, design, and implementation from a dedicated team that brings diverse talents and specialties to the work of achieving innovative solutions.

### Solution

One example of a comprehensive effort to create spaces that foster engaged and active learning and teaching occurred at EMCC. Situated in western metropolitan Phoenix, Arizona, EMCC is a member of the Maricopa Community College District, the nation's largest community college district.

With a significant construction initiative nearing, leadership at EMCC engaged a number of instructors, students, and staff to help frame the needs that could be met in new and renovated facilities. Herman Miller and its local dealership, Goodmans Interior Structures, were brought in to complete the team that would be responsible for developing a holistic learning experience.

The partnership brought together a breadth of experience and backgrounds. All had one thing in common: a desire to move beyond conventional thinking about classroom design. As part of their initial work, they surveyed faculty members to learn more about the methods they use in the classroom. Faculty ranked “creating a forum for open and free student/teacher dialogue” as their most common teaching style. It was followed by “providing instructional stimuli and facilitating discovery.”

To address these needs, the team used three principles to guide its thinking:

- 1) An institution has the power to create spaces that promote students' success and advance teaching and learning.
- 2) Creating new spaces allows an institution to address the changing needs and expectations of students and faculty.
- 3) Learning spaces cannot constrain or prescribe a certain style of teaching or learning.



Andrew Nolte © 2005 Estrella Mountain Community College

Sharing ideas is an interactive process with the support of visual tools.



Ralph Campbell © 2005 Estrella Mountain Community College

Flexible furniture and technology empower students to collaborate effectively.

The primary challenge the team faced was to rethink classroom spaces, as these places would most immediately influence a desired change in learning and teaching methods. How could the design of a classroom support collaborative and active learning, engage students and faculty, offer means for interaction among students and faculty, and challenge and support students?

It became clear that the answer to these questions wouldn't come from incremental changes to the existing classroom model. Thinking in terms of "learning studios" became descriptive of not only the physical space attributes, but also the paradigm shift toward engaged learning and teaching.

The team initially created two prototype learning studios. Designing and creating these first two spaces took about two months from planning to creation, yet the experiment gave EMCC what it needed to affirm the direction of moving from traditional classroom spaces to learning studios.

Several months after the learning studios were in full use, Herman Miller surveyed the EMCC faculty and students who taught and learned in these spaces. Herman Miller was interested in comparing and contrasting traditional classrooms with learning studios. Research methods included focus groups with students and faculty, interviews with faculty, and interviews with administrators. An online quantitative survey of students and faculty was also conducted.

Having experienced the learning studios, students and faculty had overwhelmingly positive responses. Faculty, in particular, expressed an appreciation for the learning studios as a paradigm that better served the possibilities of experiential, constructivist learning.

### Levels of interaction and engagement

The intentional flexibility of learning studios supports multiple teaching and learning styles. Without a prescriptive design, teachers are free to lecture or lead discussions or facilitate group or hands-on learning.

Mobile Intersect™ portfolio tables and Caper® chairs make it easy for students and teachers to arrange the room to fit the purpose or preference. A circle of chairs for a full-class discussion or six

tables for small group projects can be easily configured within the same space to support varied learning and teaching styles.

Intersect portfolio mobile display products can move to wherever they are needed. Larger whiteboards can quickly divide a single larger space into smaller group areas.

Wireless access throughout the spaces frees students to move, along with laptops, to where they need or want to be. Replacing desktop computers with laptops has increased levels of engagement. Students interact frequently and are more open to share information, in large part because they are not tethered to or hidden behind a computer monitor.

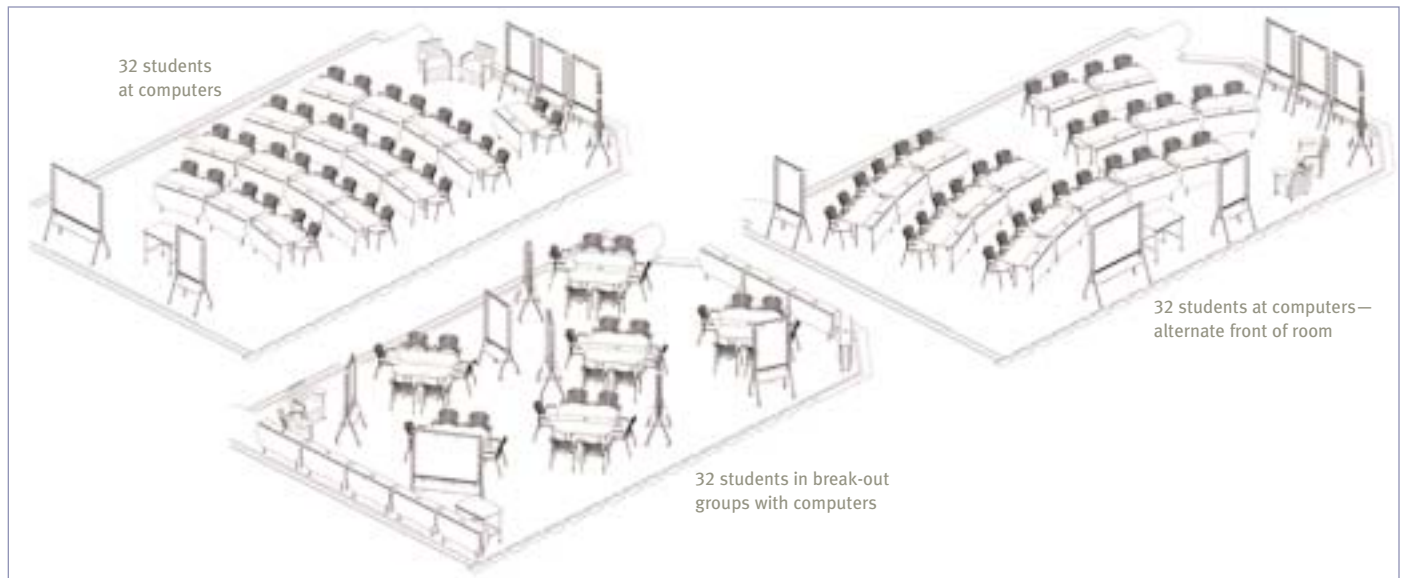
Because the studios foster direct and conversational relationships, they help avoid the passivity and isolation associated with traditional classrooms.

### Expectations of participation and accountability

The dynamic and adaptable nature of learning studios adds an element of surprise. The unexpected opportunities the mobility of the space creates also translate to a fresh outlook on what the class might become on any given day. Contrast this with the predictability and immobility of a traditional desks-in-row classroom.

Faculty at EMCC responded favorably to the ways learning studios foster independence through group activity. Ample room to accommodate break-out groups, flexibility to reconfigure the furniture and space, and the ability to display information were all cited in follow-up research. Faculty also rated highly the ability of the space to teach students to take learning into their own hands. Teachers and students alike have a hand in shaping the learning environment.

EMCC's Roger Yohe explores with faculty how they can nurture engagement and build accountability among students. "We need to focus less on presentations and more on student learning. That's active teaching. Our job is to show students how to apply the theory, not just to teach the theory. When we give our students the tools to learn, they understand they are accountable for using them."



The same furnishings in the same room arranged in a sampling of configurations provide the flexibility to accommodate various learning and teaching styles.

Learning studios also improved peer-to-peer support. Compared to traditional classrooms, learning studios permitted more relaxed, less intimidating group collaboration, while still providing academic challenge. When surveyed, students said they began to form study groups on their own or would turn to peers more often for help because interaction and participation became natural behaviors.

Learning-studio design also helped build a sense of identity and belonging. Students said the face-to-face arrangement of the tables and seating in learning studios made them more likely to introduce themselves to one another at their tables and talk about assignments or share questions.

### Skills for life and work beyond the classroom

The design of learning studios intentionally builds an atmosphere of teamwork, one in which problem solving and relationship management occur on a regular basis. Tables instead of individual desks, organic spatial arrangements instead of linear ones, discussion-based versus lecture-based teaching methods—all of these can promote communications skills, teamwork, and relationship management.

Every student is a leader in a class that supports small-group work, collaboration, and experimentation. The instructor is not the only leader. “Decentralizing the teacher’s zone” is how one EMCC faculty member described a feature of the learning-studio design. The learning studio also decentralizes the teacher’s role. Giving and taking is an essential experience for students when they leave the campus and one that faculty play a role in developing.

When surveyed, students commented how the design of the space influenced self-directed learning by

- allowing greater involvement in group activities,
- helping create an environment that was more supportive of speaking up and participating in discussions, and
- assisting in technology access to support research and dynamic learning activities.

### Interaction through formal and informal means

For many EMCC students, opportunities to interact with faculty happen primarily in the classroom. Commuting and demands of work and home mean that many students attend class and then leave campus, so the faculty/student interactions that occur within the learning studios are essential.

Traditional classroom configurations create tacit hierarchies in which the vocal and confident students sit forward and receive more individual attention while quiet or timid students find seats in the back and avoid interaction with teachers and other students. Students said they were more comfortable talking because the learning-studio arrangements were informal. Conversations flowed more easily when the classroom was more collaborative and when teachers moved around freely.

Design considerations were also made for one-to-one opportunities between faculty and students. Celeste® soft seating, Covey® stools, and Resolve® stand-up work surfaces create areas for individual conversations and smaller sessions.

### Psychological and physical comfort

As with many community colleges, EMCC has a large percentage of high-risk students. It includes a population of first-generation college goers, many of whom come with little support from family. A number of students also have little formal educational experience or are enrolling after years away from formal education. Creating an environment that welcomes, invites, and promotes a sense of well-being can help the difficult transition and influence successful outcomes.

Students’ survey responses indicate that the atmosphere of the learning studios dovetails with their expectations for higher education. The furnishings and environment communicated to them a level of professionalism, trust, and value that traditional classrooms did not. The impression they received: We are respected and valued by the college. Students described learning studios as “welcoming” and “relaxing.” With the challenges community colleges face with attrition, these positive impressions may help decrease drop-out rates.

Physical comfort is also important. Products within the learning studios are ergonomically designed to provide comfort and support. For example, students commented that Caper chairs were comfortable and didn't strain their backs, even during two-hour classes.

The open design of learning studios creates a more comfortable ambiance. Students felt they could spread out their belongings and move their chairs. Room configurations varied as well, with display tools used throughout the space. Students didn't have to strain to see things or feel too close or far away, as they might in a traditional classroom configuration. Faculty cited the roominess of the space and furniture configurations as helping them to walk freely through the room, without having to squeeze between narrow aisles.

Integrating characteristics of natural environments into the learning studios was also a design goal. A mix of shapes, patterns, colors, and hard and soft surfaces infuses the spaces with variety and surprise, and helps to create stimulating learning spaces. The Intersect portfolio butterfly table has a soft form that supplies a balance to rectilinear tables. Resolve screens add a softer element to the structural components of the studios. Some studios also have soft seating to facilitate one-on-one student and faculty interaction.

For EMCC, the initial pilot of two spaces led to the construction of 22 more learning studios on campus. Renovation and updating of existing spaces continues based on the success seen thus far. Yet for these new learning studios, radical flexibility remains the operating design principle: Space, furniture, and technology are made to change on the fly. This flexibility not only makes the room more adaptable, but also increases student and faculty engagement by creating experiential and dynamic learning spaces.

In the words of one EMCC administrator: "Good design solves problems. If the designs of our spaces don't allow teachers and learners to interact in meaningful ways, why come to EMCC at all? We need to serve as advocates for teaching and learning so that our facilities truly become learning spaces."

The partnership of EMCC, Herman Miller, and Goodmans resulted in a problem-solving, collaborative approach to planning and designing learning studios. It demonstrates how success results from the shared experiences, ideas, and participation of a diverse and creative team—not unlike the experiences of students and teachers in learning studios.

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